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Effect of drip and micro sprinkler irrigation on growth and yield of tomato (*Lycopersicon esculentum* Mill) crop under clay loam soil

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Correspondence to: **SHIVANAND H. KAKHANDAKI** Department of Soil and Water Conservation Engineering, University of Agricultural Sciences, RAICHUR (KARNATAKA)INDIA Email : shivuagengg@yahoo. co.in ■ ABSTRACT : Field experiment was conducted to evaluate the performance of drip emitters and micro sprinklers on tomato crop under clay loam soil. The analysis of the data on growth parameter and yield of tomato crop significantly increased under micro sprinkler irrigation compared to drip and control treatment. The maximum yield of (54,200 kg/ha) was recorded in microsprinkler irrigation compared to drip (53,600 kg/ha) and control (40,000 kg/ha) treatment. The crop showed mean height of 69.53 cm for microsprinkler treatment and least mean height was observed in control treatment.

- **KEY WORDS :** Growth, Yield, Drip, Micro sprinkler, Surface irrigation
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Ater is considered as liquid gold. It is a precious commodity and its judicious use is essential for maximizing crop yields. Modern irrigation methods like drip and micro sprinkler irrigation (Micro irrigation) are fast gaining popularity with the farmers due to their easy handling, water saving potential and encouraging yield results in most parts of India, especially in Tamil Nadu. The rate of applying water in a micro irrigation is an important factor which governs moisture distribution in the soil profile. A high rate may cause deep percolation loss where as, a very low rate may contribute to evaporation loss. Keeping the above facts in view, the present study on growth and yield of tomato crop under micro irrigation was studied at Tamil Nadu Agricultural University, Coimbatore.

METHODOLOGY

Field experiment was conducted using micro irrigation on growth and yield of tomato crop under clay loam soil at Tamil Nadu Agricultural University, Coimbatore. This place is situated in North Western agro climatic zone of Tamil Nadu at 11° N latitude and 77° E longitude and at an altitude of 431 MSL. To study the effect of micro irrigation on growth and yield of tomato crop under clay loam soil. The system was designed with measured paths and lengths of main, sub main and lateral lines from water source to experimental site. To maintain the required operating pressure in the system the main line was connected with the pumping source (bore well) along with a gate valve for regulating water as per the treatment requirement. Average discharge of drip and micro sprinkler were 4 lph and 36 lph, respectively. In the experimental field, tomato of F, NS-7531 variety with duration of 120 days was selected for the study. The experiments were laid out in Randomized Block Design with three replications, treatments included in this experiment were irrigation by drip system (T₁), irrigation by micro sprinkler system (T_2) , and surface irrigation (T_3) . Irrigation was given to all the treatments immediately after transplanting, control plot was irrigated weekly twice. Flow through the sub main and all laterals were controlled by separate valve. During the crop period the climate and weather data were recorded. Irrigation was not given to the crop at the time of rainfall. Biometrical observations plant height, number of leaves and root distribution, were recorded at an interval of 15 days from the date of transplanting, five plants were chosen at randomly in each treatment and tagged. The yield data was recorded as and when the fruits were harvested on attaining maturity and water use efficiency was calculated for each treatment for tomato crop, which is the ratio of the yield of the crop in kg/ha and total water utilized in mm.

W.U.E. =
$$\frac{Y}{W.U.}$$

where,

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